

Birth Control Messes With Monkey Business

By [Brandon Keim](#) 07.28.10

The powerful hormones in birth-control drugs change how lemurs smell, radically altering the subtle chemical cues that guide their attraction and communication.



Research on a 2-foot-tall primate shouldn't be extrapolated directly to humans, but the findings resonate with studies in people, which have come largely from behavioral observations and are just beginning to quantify the chemistry.

"I'm not telling people not to take birth control. But what we found in lemurs needs to be studied in humans," said Christine Drea, a Duke University reproductive biologist.

Hormone contraceptives work by tricking bodies into thinking they're pregnant, thus preventing the release of eggs. However, these hormones are powerful. Possible side effects include sexual and romantic dysfunction. And researchers studying the broader effects of contraceptives have noticed an apparent interference with women's taste in men.

When asked to rate the attractiveness of male odors, women are generally more attracted to men whose scents signify an immune system quite different from their own. Such a preference ostensibly leads to children with the most versatile disease defenses possible. That preference seems lessened [when women take hormone contraceptives](#), possibly because women's noses can't properly calibrate if their own scent has been changed.

Men's responses may also be scrambled. In one infamous study, [men gave more money to strippers](#) when they approached ovulation, and very little money if they were on the pill.

Such studies are compelling, but ambiguous. Does preference for certain immune-system profiles, as identified from sweat-soaked T-shirts, translate to real-world behavior? The [results appear mixed](#). Do men really smell something, or did women dance differently? It's hard to tell. And mate choice is just one of the animal kingdom's many roles for scent.

Studies like Drea's, published July 27 in the *Proceedings of the Royal Society B*, don't answer all these questions, but they do add chemical detail. And Drea found that the chemical changes were even more powerful than expected.

"That a contraceptive affects fertility cues might be expected, because it changes a female's internal hormonal state," said Drea. "But the fact that it obliterated all the other cues contained in odors is quite remarkable."

Drea specializes in communication among ring-tailed lemurs, 2-foot tall primates that live in large colonies, with complex social behaviors [heavily mediated by scent](#). Drea gave injections of Medroxyprogesterone, a contraceptive marketed by Pfizer as Depo Provera, to 13 female lemurs, then analyzed their chemical secretions.

Compared to their pre-contraception state, the chemical profiles changed radically. Of the hundreds of chemicals identified, the abundance of entire classes plummeted. What had been a highly diverse assortment became relatively homogeneous, and it was much harder to chemically distinguish females from each other.

The researchers don't know enough about individual chemicals to know their precise functions, but they've studied the lemurs long enough to appreciate their role not only in mate choice, but in establishing [identity, relatedness and genetic health](#).

As for the male lemurs, they started spending less time with females after they'd been dosed. "It could be they're showing less interest because the females are not showing immediately fertility. Or maybe the females just smelled weird," Drea said.

Whether similar chemical fluctuations happen in people is far from certain, but the findings seem to fit with the behavioral research. They also suggest new targets for chemical monitoring.

"I'm not saying there are negative health consequences, but they could have effects on other aspects of physiology and behavior," said Drea. "Contraception could have effects beyond those we traditionally think of."